

Amendments to the Claims

The following listing of claims replaces all prior versions of the claims and all prior listings of the claims in the present application.

1-58. (canceled)

59. (previously presented) A tyre for a vehicle wheel, comprising:

a carcass structure;

a belt structure disposed circumferentially around the carcass structure;

a tread band disposed circumferentially around the belt structure; and

sidewalls provided on opposite side portions of the carcass structure;

wherein the carcass structure comprises:

at least one carcass ply comprising thread elements substantially disposed

transversely with respect to a circumferential extension of the carcass

structure; and

at least one pair of annular reinforcing structures disposed close to respective

inner circumferential edges of the at least one carcass ply;

wherein each of the annular reinforcing structures comprises:

a first circumferentially inextensible annular insert, substantially in a form of a

crown, disposed substantially coaxially with respect to the carcass

structure close to one of the respective inner circumferential edges of the

at least one carcass ply; and

at least one second circumferentially inextensible annular insert, substantially in a form of a crown, disposed substantially coaxially with respect to the carcass structure;

wherein the first annular insert is formed of at least one first elongated element extending in substantially-radially-aligned concentric coils,

wherein the at least one second annular insert is disposed at an axially external position with respect to the first annular insert,

wherein the at least one second annular insert is formed of at least one second elongated element extending in substantially-radially-aligned concentric coils,

wherein the at least one carcass ply comprises a main part and end flaps,

wherein the main part extends between inner circumferential edges of the first annular inserts,

wherein the end flaps extend from the inner circumferential edges of the first annular inserts, away from the main part of the at least one carcass ply,

wherein the at least one carcass ply is turned back against and around a circumferentially inner coil of respective first annular inserts at transition regions between the main part of the at least one carcass ply and respective end flaps,

wherein each end flap is axially interposed between respective first and second annular inserts,

wherein each coil of each first annular insert contacts the at least one carcass ply, and

wherein the at least one carcass ply contacts each first annular insert over a whole surface extension of the first annular insert.

60. (previously presented) The tyre of claim 59, further comprising at least one filling body of elastomer material in contact with at least one of the annular inserts.

61. (previously presented) The tyre of claim 60, wherein the at least one second annular insert is interposed between the respective end flap and the at least one filling body, and

wherein the at least one second annular insert is in contact with the respective end flap on an opposite side with respect to the first annular insert.

62. (previously presented) The tyre of claim 59, wherein the respective end flap of the at least one carcass ply completely covers the respective first annular insert.

63. (previously presented) The tyre of claim 59, wherein the at least one second annular insert projects beyond one end region of the respective end flap.

64. (previously presented) The tyre of claim 59, wherein each second annular insert projects beyond an outer circumferential edge of the respective first annular insert.

65. (previously presented) The tyre of claim 59, wherein the first annular insert comprises:

at least one first series of concentric coaxial coils; and

at least one second series of concentric coaxial coils;

wherein the coils of the at least one second series are disposed in axial side-by-side relationship with the coils of the at least one first series.

66. (previously presented) The tyre of claim 65, wherein a number of coils of the at least one first series is greater than a number of coils of the at least one second series.

67. (previously presented) The tyre of claim 66, wherein the at least one first series of coils is directly in contact with the at least one carcass ply, and

wherein the at least one second series of coils is directly in contact with the respective end flap.

68. (canceled)

69. (withdrawn) The tyre of claim 59, wherein the first annular insert projects beyond an outer circumferential edge of the respective at least one second annular insert.

70. (withdrawn) The tyre of claim 60, wherein the at least one filling body is interposed between the respective end flap of the at least one carcass ply and the respective at least one second annular insert.

71. (withdrawn) The tyre of claim 70, wherein the at least one second annular insert is directly in contact with at least one axially outer side surface of a respective filling body, and

wherein the at least one second annular insert is disposed on an opposite side of the respective filling body relative to the respective end flap of the at least one carcass ply.

72. (previously presented) The tyre of claim 60, wherein the at least one filling body comprises a circumferentially outer portion directly in contact with a side surface of the at least one carcass ply.

73. (currently amended) The tyre of claim 59, wherein the at least one carcass ply further comprises:

a plurality of strip sections each comprising at least two of the thread elements disposed longitudinally and parallel to each other and at least partly covered with at least one layer of raw elastomer material;

wherein each of the strip sections extends in a substantially U-shaped configuration according to a cross-section outline of the carcass structure to define two side portions and a crown portion,

wherein the side portions substantially extend in planes orthogonal to a geometric axis of the carcass structure at mutually-spaced-apart positions in an axial direction,

wherein the crown portions extend[[s]] at a radially outer position between the side portions,

wherein the crown portions are disposed in side-by-side relationship with each other along the circumferential extension of the carcass structure, and

wherein the side portions of each strip section partly cover or are ~~[[each]]~~ partly covered ~~[[with]]~~ by a side portion of at least one adjoining strip section.

74. (previously presented) The tyre of claim 73, wherein the side portions of the strip sections mutually converge towards the geometric axis of the carcass structure, and

wherein covering of the side portions of the strip sections progressively increases in a direction of the inner circumferential edge of the at least one carcass ply, starting from a zero value close to transition regions between the side portions and the crown portions.

75. (withdrawn—currently amended) A method of manufacturing a tyre for a vehicle wheel, comprising:

making a carcass structure;

disposing a belt structure circumferentially around the carcass structure;

disposing a tread band circumferentially around the belt structure; and

providing sidewalls on opposite side portions of the carcass structure;

wherein making the carcass structure comprises:

making at least one carcass ply comprising ~~a main part and end flaps~~ thread

elements substantially disposed transversely with respect to a

circumferential extension of the carcass structure;

forming two or more annular reinforcing structures; and

applying at least one of the annular reinforcing structures close to ~~each end flap~~

respective inner circumferential edges of the at least one carcass ply;

wherein forming each annular reinforcing structure comprises:

applying a first circumferentially inextensible annular insert, substantially in a form of a crown, disposed substantially coaxially with respect to the carcass structure close to a respective ~~end flap~~ inner circumferential edge of the at least one carcass ply;

turning back ~~[[the]]~~ a respective end flap of the at least one carcass ply against and around ~~an inner~~ a circumferentially inner coil ~~[[edge]]~~ of a respective first annular insert at a transition region between a main part of the at least one carcass ply and the respective end flap; and

applying at least one second circumferentially inextensible annular insert, substantially in a form of a crown, disposed substantially coaxially with respect to the carcass structure close to the first annular insert;

wherein the first annular insert is formed of at least one first elongated element extending in substantially-radially-aligned concentric coils,

wherein the at least one second annular insert is disposed at an axially external position with respect to the first annular insert,

wherein the at least one second annular insert is formed of at least one second elongated element extending in substantially-radially-aligned concentric coils,

wherein the main part of the at least one carcass ply extends between inner circumferential edges of the first annular inserts,

wherein, prior to turning back the end flaps of the at least one carcass ply, the end flaps extend from the inner circumferential edges of the first annular inserts, away from the main part,

wherein each end flap is axially interposed between respective first and second annular inserts,

wherein each coil of each first annular insert contacts the at least one carcass ply, and

wherein the at least one carcass ply contacts each first annular insert over a whole surface extension of the first annular insert.

76. (withdrawn) The method of claim 75, further comprising applying at least one filling body of elastomer material in contact with at least one of the annular inserts.

77. (withdrawn) The method of claim 75, wherein at least one of the first and second annular inserts is formed by winding up a continuous elongated element in radially superposed concentric coils.

78. (withdrawn) The method of claim 75, wherein at least one of the first and second annular inserts is formed directly against the at least one carcass ply.

79. (withdrawn) The method of claim 75, wherein at least one of the first and second annular inserts is formed in a forming die, and

wherein the forming die is subsequently moved against the at least one carcass ply for applying the at least one annular insert.

80. (withdrawn) The method of claim 75, wherein turning back the respective end flap comprises:

axially pushing the end flap from a first position to a second position; and

exerting a rolling action on the end flap for laterally applying the end flap against the first annular insert;

wherein, in the first position, the end flap projects radially inward with respect to the first annular insert, and

wherein, in the second position, the end flap is axially oriented away from an equatorial plane of the carcass structure.

81. (withdrawn) The method of claim 76, wherein applying the at least one filling body comprises:

making the at least one filling body in a forming die; and

axially moving the forming die against the carcass structure.

82. (withdrawn) The method of claim 81, further comprising coupling the at least one filling body with the at least one second annular insert in the forming die before simultaneously applying the at least one filling body and the at least one second annular insert against the carcass structure.

83. (withdrawn) The method of claim 76, wherein applying the at least one filling body comprises forming the at least one filling body directly against the carcass structure.

84. (withdrawn) The method of claim 83, wherein forming the at least one filling body directly against the carcass structure comprises extruding at least one continuous strip element wound up in superposed coils.

85. (withdrawn—currently amended) The method of claim 75, wherein making the at least one carcass ply comprises:

preparing strip sections, each comprising longitudinal and parallel thread elements at least partly coated with at least one layer of raw elastomer material; and

depositing each of the strip sections onto a toroidal support in a substantially U-shaped conformation around a cross-section outline of the toroidal support to define two side portions and a crown portion;

wherein the side portions substantially extend in planes orthogonal to a geometric axis of the toroidal support at mutually-spaced-apart positions in an axial direction,

wherein the crown portions extend[[s]] at a radially outer position between the side portions,

wherein the crown portions are disposed in side-by-side relationship with each other along a circumferential extension of the toroidal support, and

wherein the side portions of each strip section partly cover or are [[each]] partly covered [[with]] by a side portion of at least one adjoining strip section.

86. (withdrawn) The method of claim 85, wherein the side portions of the strip sections mutually converge toward the geometric axis of the toroidal support, and

wherein covering of the side portions of the strip sections progressively increases in a direction of an inner circumferential edge of the at least one carcass ply, starting from a zero value close to transition regions between the side portions and the crown portions.

87. (withdrawn) The method of claim 85, wherein the strip sections are deposited so that the side portions of each strip section project from an inner circumferential edge of the toroidal support, and

wherein projecting ends of the side portions define the end flaps of the at least one carcass ply.

88-116. (canceled)